Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of:		
Unlicensed Use of 6 GHz Band	)	GN Docket No. 17-183
	)	ET Docket No. 18-295
	)	

REPLY COMMENTS OF DECAWAVE

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Decawave was the first commercial supplier of ultra-wideband (UWB) integrated circuit radio transceivers to system solution providers. A growing number of competitors is now also entering the market, as illustrated by the submissions from NXP[1], Microchip[2] and 3db Access[3].

These integrated solutions are making UWB technology much more accessible and convenient to integrate. This innovation is spurring a growing interest, and investment[4], in Part 15 UWB devices. While to date, Decawave have sold almost ten million units, large scale customers are now also starting to include UWB in their designs. Adoption of Decawave's UWB radio technology is surging in 2019, with compound growth (CAGR) over the next several years expected to be in multiples of hundred percent per year. The technology is being adopted by cell phone manufacturers, automotive suppliers, in home-automation products, and the Internet of Things (IoT), as well as many industrial applications as part of Industry 4.0.

Whereas early UWB applications were often in high value industrial application areas, large scale consumer deployments are now reaching the market. The submission of Marquardt[5], an early adopter of UWB for secure car entry systems, confirms the upcoming growth of the UWB market. As hinted at in Marquardt's submission, integration in mobile phones is rumoured to happen soon.

Partially based on the 15.250 wide-band rules, the majority of our customers rely on the 6 GHz band for the operation of their products. The fear of interference from broadband access systems is holding back many of them. If the Notice of Proposed Rulemaking (NPRM) in GN Docket 17-183 and ET Docket 18-295 is implemented without changes, the UWB industry will have to move higher in frequency. The cost of this re-design would be prohibitive to a large number of our customers. The link budget degradation at higher frequencies would also render some applications impractical and result in significantly reduced performance for many others. This would likely mean that many systems that operate successfully today would not be able to do so and so would lead to failed or discontinued products. For Decawave alone, the costs of writing down investment in 6 GHz circuit design and development of higher frequency solutions would run in the tens of millions of dollars.

We agree with Agilion[4], NXP[6] and the UWB Alliance[7] amongst others that UWB's unique benefits and utility to society must be preserved. As in the past, all existing Part 15 devices must be taken into account when introducing new Part 15 devices[8]. The overlapping application space and enormous difference in transmit power between the UWB rules and those proposed in the NPRM would put those that have invested in solutions under the current Part 15 rules at a severe disadvantage.

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[1] See the comment of NXP USA Inc in OET Docket 18-295 and GN Docket 17-183, filed 2/15/2019

[2] See the comment of Microchip Technology in GN Docket 17-183, filed 11/13/2017

[3] See also the reply comment of 3db Access in GN Docket 17-183, filed 11/13/2017

[4] See the comment of Agilion GmbH in GN Docket 17-183, filed 11/2/2017

[5] See the comment of Marquardt GmbH in OET Docket 18-295, filed 3/13/2019, and the reply comment of Steffen Lehr in OET Docket 18-295, filed 3/15/2019

[6] See the reply comment of NXP Semiconductors in GN Docket 17-183, filed 11/1/2017

[7] See the comment of Ultra Wide Band (UWB) Alliance in GN Docket 17-183 and OET Docket 18-295, filed 2/19/2019

[8] See also the reply comment of The Boeing Company in GN Docket 17-183, filed 11/16/2017

Decawave stands by its original comment submission[9]. We are not opposed to sharing the spectrum with broadband access systems, but we are very concerned about the published Notice of Proposed Rulemaking (NPRM) in GN Docket 17-183 and ET Docket 18-295. The sharing studies in the annex to that contribution[9] showed that UWB systems will not be able to coexist with devices operating under the regulations as proposed in the NPRM. This led us to ask for duty cycle and transmit power restrictions and to reduce the amount of bandwidth to be allocated. We don't believe in NXP's[10] suggestion of a designated spectrum access mechanism as such a mechanism would not be able to protect currently installed deployments.

[9] See the comment of Decawave in OET Docket 18-295 and GN Docket 17-183, filed 2/15/2019

[10] See the comment of NXP USA Inc in OET Docket 18-295 and GN Docket 17-183, filed 2/15/2019